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Edward J. Simburger

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12/26/2008

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EXAMINER

TRINH, THANH TRUC

ART UNIT

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1795

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/771,719	Applicant(s) SIMBURGER ET AL.	
	Examiner THANH-TRUC TRINH	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/3/2008 has been entered.

Remark

2. Claims 1-16 are pending in the application
3. Rejections under Simburger et al. (44th AIA/ASME/ASCE/AHS Structures, Structural Dynamics, and Material Conference) are withdrawn due to Applicant's declaration filed 6/12/2008.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4, 10-11, 13 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As amended claims 4, 10-11, 13 and 16 recites the limitation "curing the uncured resin to rigidize the hinge to secure in position the top and bottom film for permanently securing in position the left and right panels." There is no support in the originally filed disclosure.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the top and bottom film" in lines 25-26. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Wallsten (US Patent 3960386).

Regarding claim 1, as seen in Figures 1-2, 5 and 6, Wallsten discloses a hinge (or inflatable channel 2) for positioning a left and right panels (or walls 3) comprising a tube-like inflatable bladder (4) for encapsulating an inflation material; a top film (middle portion of panels 3) extending between the left and the right panels and encapsulating a resin 7, and a bottom film (6) extending between the left and right panels. The top film and bottom film are circumferentially disposed about the bladder. The top film has a circumferential length, the bottom film also has a circumferential length, wherein the top and circumferential lengths angularly position the left and right panels as the inflatable bladder is inflated (See Figures 1, 13 and 18)

Regarding claim 13, as seen in Figures 1-2, 5 and 6, Wallsten discloses a hinge (inflatable channel 2) for positioning a left and right panels (walls 3). The hinge comprises uncured resin (4); a top film (7) for encapsulating an uncured resin (4), wherein the top film has a top circumferential length for defining the position between the left and right panels; a coating (a middle portion of wall 3) disposed over the top film; a bottom film (6) with a circumferential length, wherein the top and the bottom circumferential length defining the position between the left and right angle. The layer 4 can be made of PVC or polyethylene... (See col. 8 lines 51-66). Therefore, it is the Examiner's position that the layer 4 is an uncured resin. In addition, "the UV light curing the uncured resin to rigidize the hinge to secure the position the top and bottom film for permanently securing in position the left and right panels" is a process-by-product limitation. The Examiner wants to point out that the patentability is based on the product, and not on the method of making such as how the resin is cured. (See MPEP §

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2113). Wallsten describes the coating layer (or middle portion of wall 3) made of nylon (See col. 5 lines 15-20), therefore it is the Examiner's position that the coating can be transparent used for passing UV light and static discharge protection.

Regarding claim 16, as seen in Figures 1-2 and 5-6, Wallsten discloses a hinge (or channel 2) for positioning a left panel and a right panel (walls 3). The hinge comprises uncured resin (7); a top film (middle portion of panels 3) coupled to the left and right panels for encapsulating the uncured resin (7). The top film has a top circumferential length for defining the angular position between the left and right panels. The limitation of "the UV light curing the uncured resin to rigidize the hinge to secure in position the top film for permanently securing in position the left and right panels" is a product-by-process limitation, and the patentability is based on the product, not on the method of making such as how the resin is cured.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wallsten (US Patent 3960386) in view of A. D. Struble Jr. (US Patent 3277479)

Regarding claim 3, Wallsten discloses a hinge as described in paragraph 3.

Wallsten does not teach that the inflation material is a sublimation powder disposed in the bladder for inflating the bladder.

A.D. Struble Jr. teaches using a sublimation powder (14) disposed in the bladder for inflating the bladder. (See '479 Figure 4 and col. 3 line 49).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Wallsten by using sublimation powder as taught by A. D. Struble Jr., because it would reduce weight and be more reliable. (See col. 1 lines 42-45)

8. Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simburger et al. (US Patent 6284966) in view of Kaji et al. (US Patent 5701067).

Regarding claims 1 and 3, as seen in Figure 5D, Simburger et al. teaches an inflatable hinge comprising an inflatable bladder (or inflatable tube) for encapsulating an inflation material (or sublimated inflation powder) and angularly positioning the left and right panels (or the top and bottom panels)

Simburger et al. does not specifically teach a top film extending between the left and right panels, or a bottom film extending between the left and right panels.

As seen in Figure 13, Kaji et al. disclose a hinge for position a left panel (solar cell unit 121 on the left) and a right panel (solar cell unit 121 on the right). The hinge comprises a cylindrical pivot (128); top film (1210) extending between the left and right panels; a bottom film (129) extending between the left and right panels. The top film and the bottom film are circumferentially disposed about the pivot, the top film having a top circumferential length, the bottom film having a bottom circumferential length. The top and the bottom circumferential lengths are for angularly positioning the left and right panels.

It would have been obvious to one skilled in the art at the time the invention was made to modify the hinge of Simburger et al. by incorporating the top film and the bottom film as taught by Kaji et al., because Kaji et al. teaches that the top film is used for holding the pivot (128) to a fixed position, and bottom film is used to reinforce the bending (or rotating) interface of the solar cell units (See Figures 13 and col. 8 line 55 through col. 9 line 67). Because both Simburger et al. and Kaji et al. are concerned with a hinge, one would have a reasonable expectation of success from the combination.

Regarding claim 2, as seen in Figure 13, Kaji et al. describe flexible and conductive leads 122 extending from the left panel and around the hinge for electrically routing power from the left panel. (See '067 col. 8 lines 25-26, col. 8 lines 58-67 bridging col. 9 lines 1-15).

Regarding claims 5-6, as seen in Figure 13, Kaji et al. describe the solar cell unit (121) attached to the hinge (126) by using adhesive layers 1210, and each solar cell unit has a substrate at the bottom and collector electrode on top to support the solar cell. (See col. 7 lines 61-67 bridging col. 8 lines 129). It is the Examiner's position that the substrate and the collecting electrodes together constitute the frame for supporting and securing the left panel to the top film and to the hinge (or pivot 128).

Regarding claim 7, as seen in Figures 12 and 13, Kaji et al. describe a flex circuit as addressed in claim 2. Kaji et al. also disclose a plurality of ground pads (metal contact – See '067 col. 8 lines 19-20) disposed on the bottom film, a plurality extension comprising conductive traces (leads 122) extending from the flex circuit to the plurality of ground pads. In addition, the location of the ground pads, either on top or bottom films, is obviously a designer choice.

Regarding claim 8, as seen in Figure 13, Kaji et al. disclose a flex circuit (122) extending from the left panel and around the hinge for electrically routing power from the left panel, a plurality of ground pads (collector electrodes and metal layer – See col. 8. lines 7-29) disposed on the bottom films and disposed on and under the left and right panels, and a plurality of extensions comprising conductive traces extending from the flex circuit to the plurality of ground pads. The location of the ground pads, either on top or bottom films, is obviously a designer choice.

Regarding claim 9, Kaji et al. disclose a flex circuit (122) extending from the left panel and around the hinge for electrically routing power from the left panel, the left panel being a solar cell panel comprising a silver contact (See col. 8 lines 7-29) and a

thin film solar cell (See col. 7 lines 61-67). The flex circuit comprises a conductor trace (122) connected the silver contact for routing power from the left panel and around the hinge. (See Figure 13).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simburger et al. in view of Kaji et al. and further in view A.D. Struble Jr. (US Patent 3277479)

Simburger et al. in view of Kaji et al. teaches a hinge as applied to claims 1-3, 5-9 above. Kaji et al. teaches connecting leads (e.g. 102 in Figure 10 or 122 in Figure 13) by conductive using resin such as epoxy (See col. 8 lines 21-29) and the cylindrical pivot 128 can be conductive or nonconductive (See col. 9 lines 4-15). The lead 122 is between the top and bottom films (1210 and 129), therefore the epoxy resin is between the top and bottom films.

Simburger et al. in view of Kaji et al. does not teach a reflective disposed on the bladder (or inflatable tube) for reflecting UV light.

A. D. Struble Jr. teaches coating the bladder (or inflatable tube 10) with metallic elements 12 such as aluminum. (See '479 col. 2 lines 54-72 and col. 3 lines 55-66 bridging col. 4 lines 1-29). It is the Examiner's position that aluminum is a reflective material. In other words, a reflective coating is disposed on the bladder.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hinge of Simburger et al. and Kaji et al. by coating the inflatable tube of Simburger et al. with aluminum layer for reflecting and conducting as

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taught by A. D. Struble Jr., because A.D. Struble Jr. teaches that it would serve the added function of lending strength when added strength is necessary (See col. 2 lines 54-72). In such combination, the reflective coating is obviously reflecting UV light into the resin (epoxy). Furthermore, claim 4 appears to describe a method of curing a resin but does not add any structural limitation to the hinge. The patentability is based on the product, and not on the method of making such as how the resin is cured. (See MPEP § 2113).

10. Claims 10-11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simburger et al. in view of Kaji et al. and A. D. Struble Jr., and further in view of Dever et al. ("Indium Tin Oxide-Magnesium Fluoride Co-Deposited Films for Spacecraft Applications", International Conference on Metallurgical Coating and Thin Films, August – 1998).

Regarding claims 10-11, Simburger et al. in view of Kaji et al. and A. D. Struble Jr. teaches a hinge as applied to claims 1-3, 5-9 above, wherein Kaji et al. teach having a transparent protective laminate (123) on top and bottom of the hinge for passing UV light. Kaji et al. also teaches connecting leads (e.g. 102 in Figure 10 or 122 in Figure 13) by conductive using resin such as epoxy (See col. 8 lines 21-29) and the cylindrical pivot 128 can be conductive or nonconductive (See col. 9 lines 4-15). The lead 122 is between the top and bottom films (1210 and 129), therefore the epoxy resin is between the top and bottom films.

Simburger et al. in view of Kaji et al. and Struble does not teach the coating is for conducting static electrical charge and made of indium tin oxide and magnesium fluoride.

Dever et al. teach coating indium tin oxide and magnesium fluoride on the surface of a spacecraft for passing UV light and conducting static electrical charge. (See the Introduction).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hinge of Simburger et al. in view of Kaji et al. and Struble by providing a coating layer of indium tin oxide and magnesium fluoride as taught by Dever et al., because it would prevent arcing. (See the Conclusion). Furthermore, claims 10 and 11 appear to describe a method of curing a resin but does not add any structural limitation to the hinge. The patentability is based on the product, and not on the method of making such as how the resin is cured. (See MPEP § 2113).

Regarding claims 13-16, as seen in Figure 5D, Simburger et al. teaches an inflatable hinge comprising an inflatable bladder (or inflatable tube) for encapsulating an inflation material (or sublimated inflation powder) and angularly positioning the left and right panels (or the top and bottom panels)

Simburger et al. does not specifically teach a top film extending between the left and right panels, a bottom film extending between the left and right panels, an uncured resin, and a coating comprises indium tin oxide and magnesium fluoride.

As seen in Figure 13, Kaji et al. disclose a hinge for position a left panel (solar cell unit 121 on the left) and a right panel (solar cell unit 121 on the right). The hinge comprises a cylindrical pivot (128); top film (1210) extending between the left and right panels; a bottom film (129) extending between the left and right panels. The top film and the bottom film are circumferentially disposed about the pivot, the top film having a top circumferential length, the bottom film having a bottom circumferential length. The top and the bottom circumferential lengths are for angularly positioning the left and right panels. Kaji et al. also teaches that leads (e.g. 102 in Figure 10 or 122 in Figure 13) and bottom film (hinge sheet 129) are connected to the solar cell units 121 by conductive using resin such as epoxy or plastic adhesive (See col. 8 lines 21-29, Figure 13) and the cylindrical pivot 128 can be conductive or nonconductive (See col. 9 lines 4-15). The lead 122 is between the top and bottom films (1210 and 129), therefore the epoxy resin or plastic adhesive are between the top and bottom films.

Dever et al. teach coating indium tin oxide and magnesium fluoride on the surface of a spacecraft for passing UV light and conducting static electrical charge. (See the Introduction).

It would have been obvious to one skilled in the art at the time the invention was made to modify the hinge of Simburger et al. by incorporating the resin, the top film and the bottom film as taught by Kaji et al., because Kaji et al. teaches that the resin is for attaching, the top film is used for holding the pivot (128) to a fixed position, and bottom film is used to reinforce the bending (or rotating) interface of the solar cell units (See Figures 13 and col. 8 line 55 through col. 9 line 67). Because both Simburger et al. and

Kaji et al. are concerned with a hinge, one would have a reasonable expectation of success from the combination. It would have been also obvious to provide a coating layer of indium tin oxide and magnesium fluoride as taught by Dever et al., because it would prevent arcing. (See the Conclusion of Dever et al.). Furthermore, claims 13 and 16 appear to describe a method of curing a resin by exposure to UV light but does not add any structural limitation to the hinge. The patentability is based on the product, and not on the method of making such as how the resin is cured. (See MPEP § 2113).

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simburger et al. in view of Kaji et al. and A. D. Struble Jr. (US Patent 3277479), and further in view of Minahan et al. (US Patent 4610077).

Simburger et al. in view of Kaji et al. and A. D. Struble Jr. discloses a hinge as applied to claims 1-3, 5-9 above

Simburger et al. in view of Kaji et al. and A. D. Struble Jr. does not teach a wrap around contact.

Minahan et al. teach using a solar cell having a wrap around contact. (See the Abstract and Figure 1k of Minahan et al.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Simburger et al. in view of Kaji et al. and A. D. Struble Jr. by providing a wrap around contact as taught by Minahan et al., because it would improve surface efficiency. (See '077 col. 1 lines 41-63)

Response to Arguments

Applicant argues that “the examiner is in error when asserting that Wallsten’s frame determines the position between the panels, which of course, do not even exist” and “Wallsten teaches that an inflatable air bag can be deployed assisted by a network of internal inflatable cylinders, which are interconnected forming a frame, such that when inflated the air bag takes on the shape of a bag.” However, Applicant’s arguments are seemed to be contradicted. The inflatable cylinders (or inflatable tubes) of Wallsten determine the shape of the air bag when inflated, and inherently determine the position between the panels when the air bag is inflated. The frame determining the position of the panels does exist because the shapes of the air bag before being inflated and after being inflated are different.

Applicant also argues that Wallsten does not teach curing the uncured resin by using UV light and the coating is serving to discharge static electrical accumulating on the coating. The Examiner respectfully disagrees. As seen in the rejection above, how a resin is cured, either by UV light or by other means, is a method claim which does not further define the structure of the device. Wallsten describes the coating layer (or middle portion of wall 3) made of nylon (See col. 5 lines 15-20), therefore it is the Examiner’s position that the coating can be transparent used for passing UV light and static discharge protection because nylon is an insulating material. Applicant mentions about UV on-orbit exposure, satellite and solar cell in the argument. However, there is nothing in claims 1, 13 and 16 about UV on-orbit exposure, satellite and solar cell, etc...

The rest of Applicant's arguments are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH-TRUC TRINH whose telephone number is (571)272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

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